

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (currently amended): A method of producing a glass substrate for a mask blank, the method comprising:

a profile measuring step of measuring a convex/concave profile of a surface of the glass substrate for a mask blank;

a flatness control step of controlling a flatness of the surface of the glass substrate to a value not greater than a predetermined reference value determined depending upon a required flatness required to the glass substrate by specifying the degree of convexity of a convex portion present on the surface of the glass substrate with reference to a result of measurement obtained in the profile measuring step and executing local machining upon the convex portion under a machining condition depending upon the degree of convexity; and

a polishing step of polishing, after the flatness control step, the surface of the glass substrate subjected to the local machining; wherein:

the surface of the glass substrate subjected to the local machining is subjected to acid treatment after the flatness control step and before the polishing step.

2. (currently amended): A method of producing a glass substrate for a mask blank, the method comprising:

a profile measuring step of measuring a convex/concave profile of a surface of the glass substrate for a mask blank;

a flatness control step of controlling a flatness of the surface of the glass substrate to a value not greater than a predetermined reference value determined depending upon a required flatness required to the glass substrate by specifying the degree of convexity of a convex portion present on the surface of the glass substrate with reference to a result of measurement obtained in

the profile measuring step and executing local machining upon the convex portion under a machining condition depending upon the degree of convexity; and

a polishing step of polishing, after the flatness control step, the surface of the glass substrate subjected to the local machining; wherein:

the surface of the glass substrate subjected to the local machining is subjected to alkali treatment after the flatness control step and before the polishing step.

3. (currently amended): A method according to claim 1 or 2, wherein the local machining is carried out by plasma etching or a gas cluster ion beam.

4. (currently amended): A method according to claim 1, wherein an acid used in the acid treatment is ~~fluorosilicic~~ fluorosilic acid and/or hydrofluoric acid.

5. (original) A method according to claim 1, wherein an acid used in the acid treatment is sulfuric acid.

6. (original) A method according to claim 1, wherein the surface of the glass substrate subjected to the acid treatment is subjected to alkali treatment after the acid treatment.

7. (currently amended): A method according to claim 1 or 2, wherein the reference value is not greater than 0.25 µm.

8. (original) A method of producing a mask blank, the method comprising the steps of preparing the glass substrate obtained by the method according to any one of claims 1 to 7, and forming a thin film as a transferred pattern on the glass substrate.

9. (original) A method of producing a transfer mask, the method comprising the steps of preparing the mask blank obtained by the method according to claim 8 and patterning the thin film of the mask blank to form a thin film pattern on the glass substrate.

10. (original) A method of producing a semiconductor device, the method comprising the steps of preparing the transfer mask obtained by the method according to claim 9 and transferring the thin film pattern of the transfer mask onto a semiconductor substrate by lithography.

11. (New) A method according to claim 2, wherein the local machining is carried out by plasma etching or a gas cluster ion beam.

12. (New) A method according to claim 2, wherein the reference value is not greater than 0.25 μm .

13. (New) A method of producing a mask blank, the method comprising the steps of preparing the glass substrate obtained by the method according to any one of claims 11 and 12, and forming a thin film as a transferred pattern on the glass substrate.

14. (New) A method of producing a transfer mask, the method comprising the steps of preparing the mask blank obtained by the method according to claim 13 and patterning the thin film of the mask blank to form a thin film pattern on the glass substrate.

15. (New) A method of producing a semiconductor device, the method comprising the steps of preparing the transfer mask obtained by the method according to claim 14 and transferring the thin film pattern of the transfer mask onto a semiconductor substrate by lithography.